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Religious Involvement, Religious Context, and Self-Assessed Health in Europe

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Abstract

In the present study, the authors examine the extent to which effects of individual religious involvement on self-assessed health are influenced by the religious context (i.e., religious involvement at the country level). The authors test their expectations using individual level data ($N = 127,257$) on 28 countries from the *European Social Surveys* (2002–2008). Results of multilevel analyses show that individual religious attendance is positively related to self-assessed health in Europe. Protestants appear to feel healthier than Catholics. Moreover, modeling cross-level interactions demonstrates that religious denominations at the national level are influential: The health advantage of Protestants as compared to Catholics is greater as the percentage of Protestants in a country is higher, yet smaller as countries have a higher percentage of Catholics. The association between religious attendance and self-assessed health does not depend on the national level of religious attendance.

Keywords

cross-national research, Europe, health, multilevel models, religious involvement

During the past few decades, numerous studies have demonstrated that people are in better health as they attend religious services more frequently (Ellison et al. 2001; Ferraro and Albrecht-Jensen 1991; Hummer et al. 1999; Idler 1987; Musick, House, and Williams 2004; Strawbridge et al. 1997). In general, positive effects of religious attendance on people's health status have been attributed to the social support, social engagement, and a positive normative influence on health behavior that active involvement in religious communities may provide. Additionally, even after taking religious attendance into account, people's health varies between religious denominations. Protestants are generally found to be in better health than Catholics, mostly because of denominational differences in norms and sanctions toward health-related behavior (Ellison 1991; Ford and Kadushin 2002). More recently, research on the health consequences of integration in religious communities as an individual has been complemented by studies on the possible health effects of contextual aspects of religiosity. In general, these

studies have found that differences between countries and districts in levels of religious involvement and in the presence and size of religious denominations are indeed associated with mortality rates (Blanchard et al. 2008; Dwyer, Clarke, and Miller 1990; Troyer 1988).

However, apart from having separate and distinct effects, individual religious involvement and the religious context may interact in influencing people's health. This would mean that the extent to which individual religious involvement is related to health is dependent on the religious context. Although such interactions between individual and contextual aspects of religious involvement have, to our knowledge, never been examined in research

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focusing on health, they have repeatedly been shown to be of central importance in studies on other outcomes. In an article on religiosity and delinquency, Stark (1996) was one of the first to formulate expectations about interactions between individual and contextual religious involvement in what he labeled the *moral communities hypothesis*. In general terms, this hypothesis states that people's norms and conduct are most strongly influenced by their individual religious involvement when living in a social context where the majority shares the same religious beliefs and norms. Stark (1996) demonstrates that religious involvement is most strongly related to adolescent delinquency when these adolescents live among peers who share a religious background (i.e., "co-religious" peers). Following Stark (1996), studies have found similar amplifying effects of contextual religious involvement for outcomes such as moral attitudes, delinquency, and suicide (Finke and Adamczyk 2008; Regnerus 2003; Scheepers, Te Grotenhuis, and van der Slik 2002; Van Tubergen, Te Grotenhuis, and Ultee 2005).

In this study, we examine the extent to which interactions between individual and contextual religious involvement as articulated by the moral communities hypothesis are also relevant in studying the association between religiosity and health. We simultaneously examine the impact of individual religious involvement and the national religious context on health using survey data on individuals from 28 European countries. At both the individual and contextual levels, two aspects of religious involvement are included (i.e., religious attendance and religious denominations). The focus on Europe is especially relevant since most research on the relationship between religious involvement and health has been limited to the United States. In this study, our focus on Europe allows us to test the strength of the association between individual religious involvement and health in a more secular sample. Additionally, this approach enables us to investigate whether conclusions about these well-established relationships may be generalized to societies outside the United States.

In sum, two main research questions are addressed in this study. First, we add to research on the United States by asking about the extent to which people from 28 European countries feel healthier as they attend religious services more often and the extent to which Protestants feel healthier than Catholics.¹ Second, we investigate

interaction effects by asking about the extent to which the relationship between religious attendance and self-assessed health is stronger as the level of religious attendance in the country people live in is higher and about the extent to which the health gap between Protestants and Catholics is larger as the percentage of Protestants and the percentage of Catholics at the national level are higher. As a result, this study demonstrates the extent to which the often found relationships between religious participation and religious affiliation and health vary cross-nationally according to differences in the religious context. In testing our hypotheses, we control for socioeconomic factors at both the individual and the national levels. People's health status is measured by a general self-assessment, which has the advantage of capturing both physical and mental aspects of people's health.

THEORY AND HYPOTHESES

Religious Attendance, Religious Affiliation, and Self-Assessed Health

Before considering the moderating role of the religious context, we summarize the common explanations for the relationship between individuals' religious involvement and health. In doing so, we distinguish two components of religious involvement: religious attendance and denominational affiliation. With regard to the association between religious attendance and health, social integration is by far the most prominent explanatory factor mentioned in the literature. Building on Durkheim's ([1897] 2006) argument that integration in communities positively affects a person's well-being in a general sense, several authors have argued that people may experience health benefits from attending religious services (cf. Ellison et al. 2001; Nooney and Woodrum 2002). After all, through religious attendance, people are able to form social ties with other persons from their religious community (Ellison and George 1994). Three mechanisms through which social integration in religious communities could actually affect people's health status may be distinguished.

First, religious communities may offer social support: Emotional, financial, and instrumental help may be derived from people who belong to the same religious community and in some cases from religious leaders themselves. As a result, as people are more strongly integrated in a religious community (i.e., as they attend religious services

more often), they may have more social resources of this kind (Schnittker 2001). Consequently, people may feel healthier mentally (e.g., the risk of stress and depression is lower) and have more opportunities to maintain, improve, or regain their physical health.

Second, people's health status may be affected by integration in religious communities through processes of social influence. In general, religious communities have explicit norms on health-related behavior. For instance, excessive consumption of alcohol and smoking, which have proved to affect health negatively, are often discouraged in these communities (Cochran, Beeghley, and Bock 1988). Through religious attendance, norms on health-damaging behavior are not only internalized by repeated exposure to admonishing sermons, but also by enabling fellow members of the community to exert social control.

Third, the social engagement that is provided by attending religious services may have beneficial effects on people's health in addition to the benefits offered by social support and social influence. Participating in rituals, socializing with fellow members of one's religious community, and the confirmation of social roles that takes place in religious settings provide people with feelings of belonging, companionship, and being valued (Idler and Kasl 1992). Furthermore, being close to others during services may reduce physical stress.

Although these mechanisms may also serve to explain the association between other secular social ties and health, religious communities are a unique form of social organizations. As Ellison and George (1994) suggest, religious communities are relatively homogeneous and share the same norms; these communities are bound by feelings of strong moral obligation, and religious communities are relatively strongly focused on rituals. In sum, in accordance with earlier studies on this subject, using a theoretical perspective building on social integration, we expect that people feel healthier as they attend religious services more often (Hypothesis 1).

With regard to the association between denominational affiliation and health, we expect that Protestants feel healthier than Catholics, even after controlling for religious attendance (Hypothesis 2). Although Durkheim ([1897] 2006) demonstrated that Protestants had a higher risk of committing suicide than Catholics, research focusing on health and well-being has generally found that Protestants are better off than Catholics (Ellison 1991; Ford and Kadushin 2002). This is mostly due to differences

between Catholicism and Protestantism in the content of norms toward health-related behavior. In general, Protestantism more strongly disapproves of behavior that is potentially damaging to people's health, such as excessive consumption of alcohol, smoking, and overindulgence. As a result, after taking denominational differences in religious attendance into account, we would expect Protestants to have a smaller risk than Catholics of experiencing serious health problems due to an unhealthy lifestyle (Ellison 1991; Ford and Kadushin 2002).

Some authors contend that the relationship between religious involvement and health is not caused by the social integration and denominational norm mechanisms described previously, but rather by psychological benefits of religious involvement (e.g., existential certainty, a sense of divine control, and consolation). Although our data did not allow us to control for these aspects of religiosity, we did include an indicator measuring feelings of subjective religiosity in our models, in order to control, to some extent, for aspects of religiosity that do not directly refer to religious attendance or characteristics of religious denominations. Due to the cross-sectional nature of our data, we are unable to fully account for selection mechanisms in our models. In the Discussion section, we further elaborate on these selectivity problems.

Religious Involvement, Religious Context, and Self-Assessed Health: Moral Communities Versus Spillover Effects

Building on Durkheim's ([1897] 2006) theory on social integration, we argue that paying explicit attention to the religious context is important to achieve a complete picture of the ways in which individual religious involvement affects health. After all, people belong to multiple social groups; for instance, members of religious communities are in most instances also engaged in secular social organizations, maintain ties with family and friends, and function in a work environment. As a result, social resources and information on healthy behavior acquired through integration in a religious community may be passed on to both people within and outside the religious group (Ellison and George 1994; Strawbridge et al. 1997). Through the existence of social networks, therefore, religious communities may influence people's health status regardless of whether these people are religiously affiliated themselves.

It is conceivable that the religious context may influence health in a different way for some social groups than for others. More specifically, this would mean that the strength of the relationship between religious attendance and health varies with the level of religious attendance at the country level. In a related way, the extent to which Protestants feel healthier than Catholics may depend on the percentage of co-religionists at the country level. Two contrasting hypotheses may be formulated about this interaction between individual religious involvement and the religious context on health.

First, following the moral communities hypothesis (Stark 1996), we would expect that individual religious involvement has the strongest influence on health in highly religious national contexts. In these societies, individual religious norms toward health-related behavior are endorsed by the majority. This not only means that people feel a stronger internal motivation to conform to these norms, but also that there is stronger social control by religious peers (Finke and Adamczyk 2008; Stark 1996). In countries where religious involvement is low, however, this external social control is often lacking, and religiously involved individuals may be faced with disapproval of their norms toward health-related behavior. As a result, the inverse relationship between religious involvement and health-damaging behaviors such as excessive alcohol consumption and drug use appears to be particularly strong in highly religious contexts (Stark 1996). This leads to two expectations, both based on the moral communities hypothesis. First, we expect that the positive relationship between religious attendance and health is stronger as the level of religious attendance in the country people live in is higher (Hypothesis 3a), since a high level of religious attendance at the national level may amplify the health advantages of individuals who frequently attend religious services. Second, we expect that the health advantage of Protestants as compared to Catholics is greater in countries with a higher percentage of Protestants; however, we expect the health advantage of Protestants to be smaller as the percentage of Catholics increases in their country (Hypothesis 3b). In this case, Catholics are spurred more strongly to refrain from health-damaging behavior, while Protestants are faced with less social pressure to do so than in countries with a high percentage of Protestants.

Second, in contrast to the moral communities hypothesis, it could also be argued that associations between indicators of individual religious

involvement and health are weaker in highly religious contexts, rather than stronger. For other outcomes, such as volunteering and gender attitudes, this is indeed what has been found (Moore and Vanneman 2003; Ruiter and De Graaf 2006). People who frequently attend religious services themselves may receive little additional value from living in a country with a high aggregate attendance frequency, since their personal religious community already provides them with sufficient social support, normative influence with regard to health behavior, and social engagement. However, through other ties in their social networks, people who are less strongly integrated into religious communities may acquire these specific social resources that are brought about by religious communities. As a result, especially people who seldom attend religious services would be able to profit from high levels of religious attendance by means of a spillover effect. This leads us to expect that the positive relationship between religious attendance and health is weaker as the national level of religious attendance increases (Hypothesis 4a). In a related way, Catholics may benefit from living in countries with a high percentage of Protestants, since social interaction with Protestants may result in Catholics adopting Protestant norms toward health-damaging behavior. As a result, we expect the health advantage of Protestants vis-à-vis Catholics to be smaller as the national percentage of Protestants increases (Hypothesis 4b).

DATA AND METHOD

Data

We used individual-level data from the *European Social Surveys* (ESS) of 2002, 2004, 2006, and 2008 (Jowell and the Central Co-ordinating Team 2003). These data are archived and distributed by the Norwegian Social Science Data Services (NSD). On the whole, the ESS sample is found to be of sufficient quality; the measurements are, in general, both valid and reliable, and the mean response rate exceeds 60 percent. The surveys contain information on self-assessed health, religious attendance, denomination, and socioeconomic position for individuals aged 15 years and older living in private households in 30 European countries, Turkey, and Israel. For each survey round, results of face-to-face interviews with around 1,000 respondents are included for each of these countries. In total, the pooled data set contains information on 178,022 respondents. Information

on gross domestic product (GDP) per capita was collected from Eurostat (2009). Other national-level characteristics were derived by aggregation from the individual-level data.

We did not include Turkey and Israel because of the unique position of these countries in the European context with regard to religious denominations. We excluded Cyprus and Iceland since there were no Protestant or Catholic respondents in these countries, respectively. In the wave of 2004, Finland, France, Hungary, and the United Kingdom were excluded from the sample because of missing information on religious affiliation. For some countries (i.e., Austria in 2002, Bulgaria in 2006, Czech Republic in 2002, Estonia in 2008, and France in 2002), one wave could not be used due to missing information on the control variables. As a result, 152,984 respondents remain available for our sample from 28 European countries: Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, the Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, and the United Kingdom.²

For our analyses, only respondents aged 25 years and older were selected. People under the age of 25 often still live in the parental home and have not yet completed their education. Including these respondents would complicate our adjustment for people's socioeconomic position. This selection leads to a further exclusion of 21,254 respondents (13.9 percent). As a sensitivity analysis (presented in Web Appendix 1),³ we excluded people aged 75 or older because they constitute a very selective group of relatively healthy people (after all, only the healthiest part of the population reaches this age, and only the noninstitutionalized segment of this age group was interviewed). The exclusion of the oldest age group did not lead to different conclusions. We therefore decided to include these respondents in our final analyses. Listwise deletion on the other individual-level variables leaves 127,257 respondents available to comprise our final sample. We decided not to impute or substitute missing values because the percentage of respondents lost is only modest (3.4 percent of the age-selected sample are lost due to listwise deletion) and because the largest part of the missing values was caused by missing information on religious affiliation, which is difficult to estimate as a function of the other variables available to us.

Measurements

Individual self-assessed health was measured by asking respondents directly how their health is in general. Five answering categories were distinguished: 0 = *very bad*, 1 = *bad*, 2 = *fair*, 3 = *good*, and 4 = *very good*. This measure taps both physical and mental aspects of people's general health status. In earlier research, self-assessed health has proved to be both a reliable and valid measure of health and a strong predictor of mortality (Idler and Benyamini 1997). Additionally, by using this subjective health measure, we follow several authors who have also used this indicator to examine health in the European context (see, e.g., Eikemo 2009).

Religious attendance was measured by asking people how often they attend religious services apart from special occasions. Seven categories were distinguished: every day, more than once a week, once a week, at least once a month, only on special holidays, less often, and never. To adequately deal with the ordinal nature of this variable, some authors have transformed it into a scale (cf. Ruiter and De Graaf 2006). However, we used the original measure to preserve consistency with previous research examining effects of religious involvement and the religious context on other outcomes (e.g., Finke and Adamczyk 2008; Scheepers et al. 2002). Additionally, the categorization in the ESS is too vague to allow for a direct translation into, for instance, the number of days per week on which people attend religious services.⁴

To obtain information on religious denomination, respondents were asked whether they consider themselves as belonging to a particular religion or denomination. People who responded affirmatively to this question were asked to which religion or denomination they belonged. Eight categories were distinguished: Catholic, Protestant, Eastern Orthodox, other Christian religion, Jewish, Muslim, Eastern religions, and other non-Christian religions. Because of the low numbers of respondents in each of the last five categories, we collapsed people in those groups into an "other religion" category. People who answered that they had no religious affiliation were coded as having no denomination. As a result, our final denomination variable contains five categories.

In our analyses, we used eight control variables at the individual level. We controlled for the respondent's age (measured in years) since people's age has proved to be related to both religious

attendance and health. We included a squared age term to account for curvilinear effects of age on health. We included a binary measure of female gender (coded 1 if female, 0 if male). The socioeconomic position of the respondent was accounted for by distinguishing four educational levels (included as a set of dummy variables): (1) complete or incomplete primary education or first stage of basic education, (2) lower secondary education or second stage of basic education, (3) upper secondary education, and (4) tertiary or postsecondary education (including postsecondary, nontertiary education). By using this general measure instead of a more detailed categorization, comparability problems regarding the educational systems in various countries were avoided as much as possible. The first of these educational levels is the omitted reference in regression models.

Additionally, we controlled for people's socioeconomic position during the process of socialization by including the parental educational level, which has the same categories as people's own educational level. By doing this, we may partly capture people's health during youth because children of better educated parents may have had better access to health care and may have experienced less exposure to health-damaging behavior. Moreover, the parental level of education has proved to be negatively related to religious attendance. Given that religious affiliation and participation are quite stable once the process of socialization has been completed, the parental educational level is likely to be a better marker of the influence of socioeconomic status on religious affiliation and participation than current income or social class. We have taken the higher of the father's and the mother's educational levels to create this variable. In cases where information on only one parent was available, we used this as the parental educational level. Since about 5 percent of the respondents in our sample did not report an educational level for either parent, we also included a dummy variable measuring whether information on this variable was missing. This allows us to retain these respondents for the analyses.

The degree of urbanization of respondents' living environment was included to adjust for differences in the proximity of both places of worship and health services. People were asked whether they lived (1) on a farm or in a home in the country, (2) in a country village, (3) in a town or small city, (4) in the suburbs or outskirts of a big city, or (5) in a big city. Because the relationship between urbanization and self-assessed health proved to be nonlinear, we included these categories as a set of

dummy variables. We treated in a town or small city as the omitted reference dummy in regression models. Finally, we controlled for marital status because this has proven to be related to both people's health status and their religious attendance and affiliation. Four groups were distinguished: (1) married or cohabiting, (2) never married, (3) widowed, and (4) divorced. We measured these as a set of dummy variables (married or cohabiting is the omitted reference).

To deal with the argument that aspects of religiosity other than religious attendance or characteristics of religious denominations produce beneficial consequences for people's health, we included an item measuring feelings of subjective religiosity. People were asked, "How religious are you?" Respondents answered using categories ranging from *not at all religious* (coded 0) to *very religious* (coded 10). Although this measure may not fully encompass the content of religious beliefs, it is the most appropriate measurement available in these data.

To measure the level of religious attendance at the national level, we computed the mean religious attendance score per country using the individual-level data in the ESS.⁵ The percentage of Catholics and the percentage of Protestants were also computed by direct aggregation from the individual-level data. We account for prosperity differences between countries by including the GDP per capita at the national level (measured in U.S. dollars divided by 1,000, at current prices and purchasing power parities). To take into account the influence of extreme cases at the lower and upper ends of the prosperity distribution on our estimates and to control for nonlinear effects, the logarithm of the GDP per capita is used in our analyses. To account for the possibility that effects of the religious context simply reflect country differences in the level of education, we controlled for the percentage of people who completed tertiary education at the national level. This information was obtained by aggregation of educational data at the individual level. We also controlled for survey wave by including dummy variables for each survey round (the 2002 wave is the omitted reference).

Table 1 contains descriptive statistics for the variables included in our models. Overall, the respondents report a religious attendance of 1.660, which corresponds to attending less often than once a month. The largest religious group in the sample is Catholic (33.8 percent), followed by Protestants (16.9 percent), then Eastern Orthodox (9.1 percent). In total, 36.5 percent of the respondents do not consider themselves as belonging to a particular religion

Table 1. Descriptive Statistics for the Individual- and Country-Level Characteristics

	Range	Mean	SD
Individual-level characteristics			
Self-assessed health	0 to 4	2.680	.932
Religious attendance	0 to 6	1.660	1.550
Denomination			
Catholic	0 to 1	.338	.473
Protestant	0 to 1	.169	.375
Eastern Orthodox	0 to 1	.091	.287
Other	0 to 1	.038	.191
No religion	0 to 1	.365	.481
How religious are you	0 to 10	4.920	2.949
Age	25 to 110	51.483	16.111
Age-squared	625 to 12,100	2,910.018	1,748.251
Educational level			
Primary education complete or incomplete	0 to 1	.178	.382
Lower secondary or second stage of basic	0 to 1	.195	.396
Upper secondary	0 to 1	.323	.468
Tertiary education	0 to 1	.305	.460
Parental educational level			
Primary education complete or incomplete	0 to 1	.368	.482
Lower secondary or second stage of basic	0 to 1	.205	.404
Upper secondary	0 to 1	.226	.418
Tertiary education	0 to 1	.169	.374
Not known	0 to 1	.033	.179
Gender (1 = female)	0 to 1	.540	.498
Urbanization			
Farm or home in the countryside	0 to 1	.066	.248
Country village	0 to 1	.322	.467
Town or small city	0 to 1	.303	.460
Suburbs or outskirts of a big city	0 to 1	.124	.329
A big city	0 to 1	.185	.388
Marital status			
Married or cohabiting	0 to 1	.613	.487
Widowed	0 to 1	.082	.275
Never married	0 to 1	.126	.332
Divorced or separated	0 to 1	.110	.313
European Social Survey wave			
2002	0 to 1	.229	.420
2004	0 to 1	.243	.429
2006	0 to 1	.289	.453
2008	0 to 1	.240	.427
Country-level characteristics			
Mean religious attendance	.92 to 3.22	1.613	.629
Percentage Catholic	.0 to 90.70	32.507	29.844
Percentage Protestant	.2 to 62.80	16.207	18.711
Gross domestic product per capita	6,550 to 66,164	26,937.251	10,710.437
Gross domestic product per capita (logged)	8.79 to 11.10	10.106	.470
Percentage completed tertiary education	9.50 to 55.50	28.208	11.488

Note: N = 127,257.

or denomination. The mean respondent's age is 51.5 years. Most respondents have at least completed upper secondary education (62.8 percent). There are slightly more women than men in our sample (54 percent).

As can be seen, most respondents live in either a country village (32.2 percent) or a town or small city (30.3 percent), and the majority of the respondents are married or cohabiting (69.5 percent). All

indicators of the religious context vary substantially between countries. The mean religious attendance score ranges from .92 in the Czech Republic to 3.22 in Poland. The percentage of Catholics is lowest in Finland (.01 percent) and highest in Poland (90.7 percent), whereas the percentage of Protestants ranges from .2 percent in the Russian Federation to 62.8 percent in Finland. The GDP per capita varies considerably between countries, ranging from \$6,550 in the Ukraine to \$66,164 in Luxembourg. The percentage of people who completed tertiary education is lowest in Italy (9.5 percent) and highest in the Ukraine (55.5 percent). To facilitate interpretation of the intercepts, all country-level variables were grand mean centered for the analyses.

To test our hypotheses, we used linear multilevel analyses to account for the clustering of individuals within countries, which may lead to underestimation of standard errors if nonhierarchical procedures are used (Snijders and Bosker 1999). We used individuals as level-one units and countries as level-two units. For each of our models, we report unstandardized regression coefficients (B), standard errors (*SE*), level one and level two variances unexplained by the models, and three measures indicating model fit (i.e., $-2 \log$ likelihood, Akaike information criterion [AIC], and Bayesian information criterion [BIC], for all of which a lower value indicates a better fitting model). For all tables containing cross-level interaction effects, random slope variance is reported also. As a sensitivity analysis, we estimated logistic multilevel analyses using a dichotomized version of our outcome variable (good or very good health vs. less than good health). The results of these analyses were substantively similar to those from the linear models (see Web Appendix 3).

RESULTS

Table 2 presents the results of the multilevel analyses in which self-assessed health is regressed on individual religious affiliation, attendance, and controls. First, Model 1 represents the empty model with variance components. We find variance in the dependent variable at both levels of analysis, most strongly at the individual level. The intraclass correlation of individuals within countries amounts to .125 ($.109 / (.109 + .765)$), which means that 12.5 percent of the variance in health is situated at the country level. Model 2 shows results of analyses in which individual-level religious affiliation, attendance, and control variables were

added to the equation. Looking at the control variables, women appear to feel less healthy than men, and people feel less healthy as they get older. This negative age effect levels off at the upper end of the age range. This may reflect older respondents in the sample being relatively healthy as compared to institutionalized persons. People from both the least urbanized localities and big cities feel most healthy (i.e., we find a parabolic effect of urbanization on self-assessed health), and married people feel healthier than unmarried people, regardless of whether the unmarried are widowed, divorced, or never married. Our finding that people feel healthier at higher educational levels is consistent with previous research in this field. Looking at the parental educational level, people whose parents have at least completed upper-secondary feel most healthy. People who were interviewed in 2002 and 2004 felt slightly less healthy than those who participated in 2006 and 2008. In a model only including the control variables, level one and level two variances are decreased to .634 and .107, respectively. This means that level one variance is decreased by 17.1 percent, and level two variance is decreased by 1.8 percent.

In support of our first hypothesis, the results demonstrate that people feel healthier when they attend religious services more often, even when controlling for individual-level variables and denomination. Looking at the effects of people's religious denomination on self-assessed health, the results show that Catholics feel significantly less healthy than Protestants, which is in accord with our second hypothesis. Nonreligious people feel less healthy than Protestants, but they feel slightly healthier than Catholics. The Eastern Orthodox and people who belong to "other" religious groups (i.e., Jews, Muslims, and minor Christian and non-Christian denominations) feel significantly less healthy than all other groups. This may be due to actual religious discrimination, or marginalization effects on health, or social differences between denominations unaccounted for in our models. In sum, individual religious integration as well as norms toward health-related behavior of specific denominations appear to be associated with people's health. Additional tests (shown in Web Appendix 4) revealed that there were no significant differences between Catholics and Protestants in the strength of the association between religious attendance and health. This indicates that whereas we find denominational differences in self-assessed health, the benefits of religious attendance are equal across religious groups.

Table 2. Results of Multilevel Linear Regression of Self-Assessed Health on Individual Religious Attendance and Religious Denomination

	Model 1		Model 2		Model 3	
	B	SE	B	SE	B	SE
Constant	2.627***	.062	3.459***	.066	3.493***	.066
Gender (1 = female)			-.080***	.004	-.076***	.005
Age			-.023***	.001	-.023***	.001
Age-squared			.000***	.000	.000***	.000
Urbanization						
Farm/home in countryside			.027**	.010	.027**	.010
Country village			.008	.006	.009	.006
Town or small city (reference)						
Suburbs/outskirts			.016*	.008	.016*	.008
A big city			.020**	.007	.020**	.007
Marital status						
Married or cohabiting (reference)						
Widowed			-.106***	.009	-.105***	.009
Never married			-.097***	.007	-.097***	.007
Divorced or separated			-.092***	.008	-.091***	.008
Educational level						
Primary (reference)						
Lower secondary			.180***	.008	.178***	.009
Upper secondary			.274***	.008	.272***	.008
Tertiary			.402***	.009	.400***	.009
Parental educational level						
Primary (reference)						
Lower secondary			.015*	.007	.015*	.007
Upper secondary			.065***	.008	.064***	.008
Tertiary			.057***	.008	.057***	.008
Not known			-.053***	.013	-.053***	.013
European Social Survey wave						
2002 (reference)						
2004			.006	.007	.005	.007
2006			.016*	.007	.015*	.007
2008			.033***	.008	.032***	.007
Denomination						
Protestant (reference)						
Catholic			-.050***	.009	-.048***	.009
Eastern Orthodox			-.133***	.015	-.131***	.015
Other			-.127***	.013	-.120***	.013
No religion			-.030***	.008	-.044***	.008
Religious attendance			.020***	.002	.027***	.002
How religious are you					-.008***	.001
Level 1 variance (individuals)	.765***	.003	.632***	.003	.632***	.003
Level 2 variance (countries)	.109***	.029	.101***	.027	.101***	.027
-2 log likelihood	327,216.6		303,000.4		302,937.2	
Akaike information criterion	327,222.6		303,056.4		302,995.2	
Bayesian information criterion	327,251.8		303,329.6		303,278.1	

Notes: N1 = 127,257; N2 = 28.

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed).

In Model 3, we included the item measuring how religious people consider themselves to be in general. Our results show that instead of explaining

the association between religious attendance and self-assessed health, adjusting for this measure of subjective religiosity leads to an increase of the

effects of religious attendance. Surprisingly, people appear to feel less healthy as they report stronger feelings of religiosity. Additional tests demonstrate that this finding is not caused by collinearity between several aspects of religion in our model: The bivariate relationship between subjective religiosity and self-assessed health is negative as well. This specific measure probably taps aspects of religiosity that are brought about by a worsening health status, as opposed to those sides of religious involvement that may actually prevent people's health from deteriorating. This would parallel the finding from previous studies that praying is negatively related to people's health (Ellison et al. 2001), which should be interpreted as an increase in praying following a deterioration of health. Because all indicators of model fit suggest that model fit is improved substantially by including subjective religiosity, we decided to control for this variable in all models (-2 log likelihood is improved by 63.2 [303,300.4 – 302,937.2], which is significant at $p < .01$ [$df = 1$]; AIC and BIC, which take into account model complexity, are substantially lower).

Table 3 presents results regarding the moderating role of religious context. Because correlations between the indicators of the religious context are strong (see Web Appendix 5), we did not include the three variables simultaneously. We also estimated direct effects of the religious context on self-assessed health, but these were all nonsignificant (see Web Appendix 6). Additionally, a version of Table 3 showing estimates for all control variables and all random and intercept slope covariance parameters is available in Web Appendix 7. In Model 1 of Table 3, we allowed the effect of religious attendance on self-assessed health at the individual level to vary across countries. There is a significant random slope variance, and all fit indicators point toward a substantial improvement in model fit vis-à-vis Model 3 of Table 2 (-2 log likelihood is improved by 207, which is significant at $p < .01$ [$df = 4$]; AIC and BIC are substantially lower). This indicates that the strength of the relationship between religious attendance and self-assessed health does indeed vary across European countries.

In Model 2, we examined random slope effects of religious denominations on self-assessed health. Note that the Eastern Orthodox category has been merged with the "other" religions category, to allow random slope estimates to be computed (with two separate categories this would be impossible, given that Eastern Orthodox respondents were absent in some of the countries in our sample). The

random slope variance of the health gap between Catholics and Protestants is significant, which implies that the health advantage of Protestants vis-à-vis Catholics does indeed vary systematically across countries. Moreover, all model fit indicators suggest that model fit is increased substantially by allowing the association between religious denomination and self-assessed health to vary across countries (-2 log likelihood is improved by 229.4, which is significant at $p < .01$ [$df = 6$]; AIC and BIC are substantially lower).

As a next step, we examined the extent to which indicators of the religious context account for these cross-national variations in the association between individual religious involvement and self-assessed health. In Model 3, a term was included for a cross-level interaction between individual religious attendance and national religious attendance. The random slope variance is hardly decreased as compared to Model 1. Model 3 shows no significant cross-level interaction between individuals' religious attendance and the mean national level of religious attendance. In sum, although the strength of the association between individual religious attendance and self-assessed health does indeed appear to vary among European countries, these variations are not related to national levels of religious attendance. Hence, no support is found for either the moral communities hypothesis (3a) or the spillover hypothesis (3b): High average levels of religious attendance neither offer compensation to people who never attend religious services nor increase the health advantage of individuals who frequently attend religious services.

In Models 4 and 5 of Table 3, we included cross-level interaction terms between individual religious denomination on the one hand and the percentage of Catholics and the percentage of Protestants on the other hand. In both models, the random slope of being Catholic vis-à-vis Protestant is reduced strongly after including cross-level interactions. This indicates that cross-national variation in the health advantage of Protestants as compared to Catholics is indeed partly caused by cross-national differences in the size of Catholic and Protestant denominations.

A closer look at the cross-level interaction effects reveals that the health advantage of Protestants as compared to Catholics is smaller as the percentage of Catholics at the national level increases (Model 4). Figure 1 shows a graphical presentation of this interaction effect. In countries with low percentages of Catholics, Protestants feel healthier than do Catholics. However, in countries

Table 3. Results of Multilevel Linear Regression of Self-Assessed Health on Individual and National Religious Attendance and Religious Denomination, and Cross-Level Interactions

	Model 1		Model 2		Model 3		Model 4		Model 5	
	B	SE	B	SE	B	SE	B	SE	B	SE
Constant	3.493***	.065	3.451***	.075	3.540***	.046	3.479***	.054	3.479***	.057
Individual level										
Denomination (Protestant = reference)										
Catholic	-.044***	.009	-.029	.026	-.044***	.009	-.034	.017	-.041*	.019
Eastern Orthodox ^a	-.115***	.015			-.113***	.015				
Other	-.120***	.013	-.095**	.028	-.120***	.013	-.088**	.024	-.091**	.026
No religion	-.036***	.008	-.003	.022	-.036***	.008	-.003	.020	-.007	.022
Religious attendance	.024***	.005	.026***	.002	.024***	.005	.026***	.002	.027***	.002
How religious are you	-.008***	.001	-.008***	.001	-.008***	.001	-.008***	.001	-.008***	.001
Country level										
Gross domestic product per capita (logged)					.500***	.068	.370***	.055	.319***	.060
Percentage completed tertiary education					-.001	.003	-.010**	.003	-.010***	.003
Mean religious attendance					.123	.066				
Percentage Catholic							-.005*	.002	.006*	.003
Percentage Protestant										
Cross-level interactions										
Mean Religious Attendance × Religious Attendance					-.003	.008				
Percentage Catholic × Catholic as Individual							.003**	.001		
Percentage Catholic × Other Religion as Individual							.003**	.001		
Percentage Catholic × No Religion as Individual							.002**	.001		
Percentage Protestant × Catholic as Individual									-.006***	.001
Percentage Protestant × Other Religion as Individual									-.004*	.001
Percentage Protestant × No Religion as Individual									-.002	.001
Variance components and model fit										
Level 1 variance (individuals)	.631***	.003	.630***	.003	.631***	.003	.630***	.003	.630***	.003
Level 2 variance (countries)	.097***	.026	.130***	.037	.036***	.010	.055***	.017	.061***	.020
Random slope religious attendance	.001**	.000			.001**	.000				
Random slope Catholic			.012*	.006			.003	.003	.004*	.002
-2 log likelihood	302,730.2		302,707.8		302,701.0		302,667.0		302,659.6	
Akaike information criterion	302,792.2		302,781.8		302,771.0		302,753.0		302,745.6	
Bayesian information criterion	303,094.6		303,142.7		303,112.4		303,172.4		303,165.0	

Note: N1 = 127,257; N2 = 28.

^aIn models containing random slopes for religious denomination, Eastern Orthodox and "other" religions were merged into one category. Results control for gender, educational level, age, age-squared, urbanization, parental educational level, and marital status. A version containing estimates for the control variables and full random slope and covariance estimates is available in Web appendix.

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed).

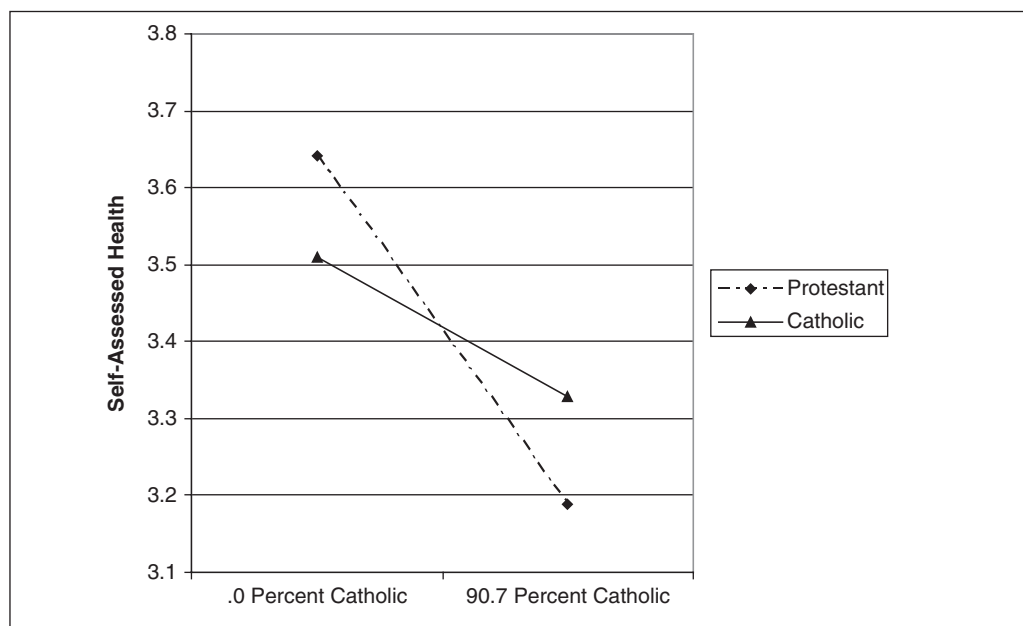


Figure 1. The Association between the Percentage of Catholics at the Country Level and Self-Assessed Health According to Individual Religious Denomination

Note: Results control for gender, educational level, age, age-squared, urbanization, parental educational level, marital status, religious attendance, subjective religiosity, *European Social Surveys* wave, gross domestic product per capita (logged), and percentage completed tertiary education.

with high percentages of Catholics, Protestants are actually worse off than Catholics. Furthermore, Figure 1 suggests that a high percentage of Catholics is detrimental to both Protestants and Catholics.

Additionally, in Model 5, the extent to which Protestants feel healthier than Catholics do proves to be strongly dependent on the percentage of Protestants at the national level. This can be understood more clearly by examining the graphic presentation of this cross-level interaction effect in Figure 2. Whereas Catholics and Protestant are more or less equally healthy in countries with the lowest percentage of Protestants (i.e., Russia, .2 percent), Protestants clearly feel healthier than do Catholics in countries with the highest percentage of Protestants (i.e., Finland with 62.8 percent). What is especially striking in Figure 2 is that Catholics seem to be not at all influenced by the percentage of Protestants, whereas being a Protestant clearly results in stronger health benefits when living among a majority of co-religionists. Although in Model 5 this interaction effect may seem small ($-.006$), it is actually quite substantial when the range of this variable is considered (i.e., $62.6 + -.006 = -.376$). Overall, we find support for the moral communities hypothesis (4a), whereas the spillover hypothesis (4b) is not supported at all by

our results: Instead of providing spillover of health-related norms to Catholics, a high percentage of Protestants leads to a greater health advantage for Protestants, probably by stronger internal and external sanctioning of health-damaging behavior.⁶

CONCLUSION AND DISCUSSION

This study focused on the role of the religious context in influencing the association between individual religious involvement and health. Two components of religious involvement were distinguished at both the national and individual levels: religious attendance and denominational affiliation. First, we extended the literature by moving beyond the United States to the European context by asking about the extent to which people from 28 European countries feel healthier as they attend religious services more frequently and the extent to which Protestants feel healthier than Catholics. Our findings indicate that in Europe, religious attendance is positively related to self-assessed health, even when controlling for socioeconomic factors and denominational differences at the individual level. This study thus supports the argument

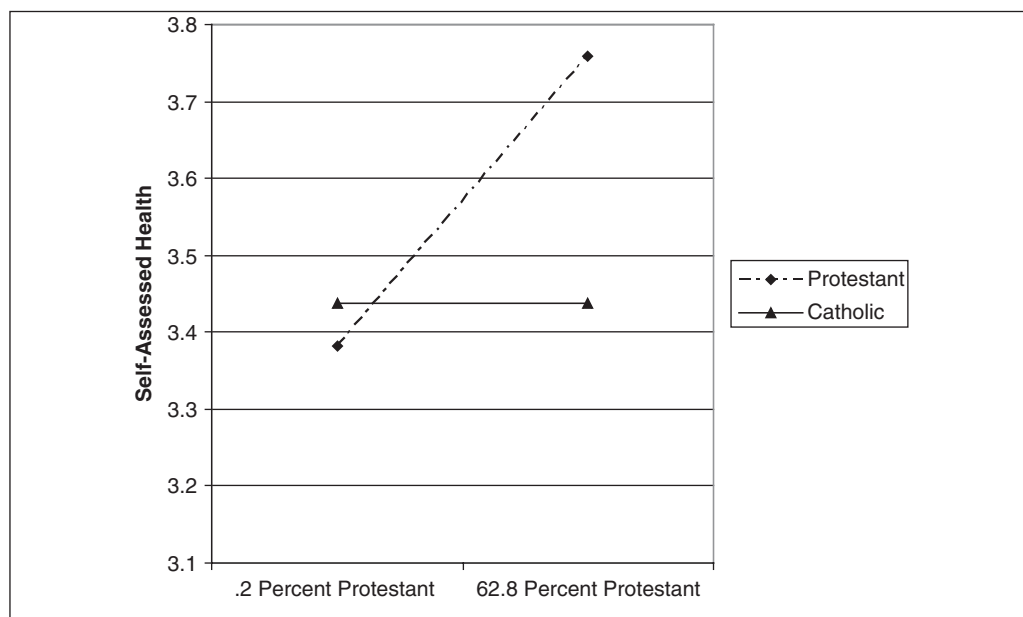


Figure 2. The Association between the Percentage of Protestants at the Country Level and Self-Assessed Health According to Individual Religious Denomination

Note: Results control for gender, educational level, age, age-squared, urbanization, parental educational level, marital status, religious attendance, subjective religiosity, *European Social Surveys* wave, gross domestic product per capita (logged), and percentage completed tertiary education.

that integration into religious communities may yield health benefits. Additionally, in accord with previous research, Protestants do indeed feel healthier than Catholics do in the European context.

Second, we asked about the extent to which the strength of the association between individual religious involvement and health is related to characteristics of the religious context. In answer to our second research question, our results offer partial support for the moral communities hypothesis, whereas the spillover hypothesis is not supported at all. The finding that Protestants feel healthier than Catholics do applies most strongly to societies in which the relative percentage of Protestants is high. Rather than offering compensation to Catholics by causing spillover of social support and social influence to people outside religious communities, Protestant social contexts allow for even larger health advantages for Protestants. Building on Stark (1996), and consistent with findings from research on other outcomes such as delinquency and moral attitudes (Finke and Adamczyk 2008; Regnerus 2003; Scheepers et al. 2002), this is probably due to the fact that individual religious involvement more strongly influences people's norms and conduct in a social context in which such norms and conduct are endorsed by the

majority. Importantly, our results revealed that the strength of the association between religious attendance and self-assessed health varies across European countries. However, religious attendance at the national level is not able to explain these patterns of cross-national variation. Together with our findings on religious denominations, this implies that examining attendance levels is not enough. It is religious group membership rather than the level of religious integration, per se, that explains differences between countries in the association between individual religious involvement and health. Hence, at the contextual level, the content of religious beliefs appears to be more important for influencing health than mere social network mechanisms. In sum, to establish the extent to which people's health status is influenced by their religious involvement as an individual, it is important to take into account the country in which people live, and in particular the dominant religious denominations in these countries.

This study has limitations, some of which may be dealt with in future research. First, we have solely focused on a general self-assessed health measure. Although this measure provides a strong and valid indicator for people's general health status, it would be interesting to consider more specific

health outcomes (e.g., depression, health-damaging behavior, and cardiovascular disease). After all, examining the relationship between religious involvement and more detailed health indicators may offer better insight into the exact mechanisms through which religious integration affects people's health status. Unfortunately, we are not aware of the availability of comparable data from countries across Europe containing such detailed information on people's health.

Second, we have not been able to investigate the extent to which our results are affected by selectivity problems. Selection bias would particularly be the case if the relationship between religious attendance and health were not merely caused by beneficial effects of religious attendance on health, but also by less healthy people being less able to attend religious services (e.g., because of physical problems and not being able to leave the confines of one's home due to disability). Unfortunately, the cross-sectional nature of our data prevents us from completely excluding the possibility that selection bias. However, results from previous studies based on longitudinal data indicate that selectivity accounts only for a minor part of the relationship between religious attendance and health (Idler 1987). Moreover, our results did not change with different measurements of age, such as when we excluded respondents 75 or older. Since the combination of high levels of religiosity and physical incapacity to attend religious services is arguably especially prevalent among the elderly, this finding lends further support to our argument that selectivity probably has only a minor influence on our results.

Third, to assess in more detail the mechanisms underlying our findings, information on complex social networks at both the individual and national levels would be necessary. Without highly detailed data of this character, conclusions about whether it is mainly social pressure in a normative respect, as suggested by the moral communities hypothesis, or in terms of the distribution of social support (or explanations not considered in this study) remain somewhat speculative. Similarly, moving to lower contextual levels (e.g., neighborhoods or parishes) may offer more detailed information on which processes are operating.

Fourth, in this study, we focused on the contrast between Protestants and Catholics. However, our results suggest that examining contrasts among other religious denominations could be an interesting addition. Our cross-level interaction models have shown that the strength of the contrast between "other" religions and Protestants differs

quite considerably across European countries. However, none of the religious denominations in our sample (outside Catholics and Protestants) is represented in all of the countries in our data set. Hence, it was impossible to examine the contrast between the Eastern Orthodox and any other denomination without excluding countries from our sample. Although people from "other" denominations are represented in all countries, focusing on this group would not yield much information, since this group is highly heterogeneous (i.e., it includes adherents to Islamic and Jewish religions as well as Eastern denominations). As a result, although extending the focus to other denominational contrasts would certainly be interesting, we were unable to do so with our data. Therefore, we encourage future researchers to examine these contrasts with other data sources.

In general, we conclude that analyzing individuals' religious involvement and the religious context simultaneously provides a more adequate and comprehensive picture of the nature of the association between religious involvement and health than merely examining religious involvement at the individual level. This highlights the argument that theoretical explanations linking religious integration to health should move beyond mechanisms of social integration at the individual level and that they should also consider the social context in a broader perspective. Specific norms of religious denominations with regard to health-damaging behavior, social support engendered by religious communities and leaders, and social activities and engagement within religious organizations may affect health even beyond the boundaries of the parish.

Strikingly, our findings seem to indicate that this does not entail that spillover effects offer beneficial consequences of the religious context, let alone a compensation in terms of social resources. Protestants appear to adhere most strongly to the norms of their denomination when living among high numbers of co-religionists. To obtain a more detailed picture of the relationship between religious involvement and health, and in order not to obscure complexities of the aforementioned kind, it is revealing to consider effects of religious involvement in several religious contexts.

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NOTES

1. In this study, we limit our focus to differences between Protestants and Catholics. These are the only denominations with affiliates in all the European countries in our sample. Therefore, we did not formulate hypotheses about other denominations (e.g., Eastern Orthodox and non-Christian denominations). Additionally, our data did not allow us to distinguish between Protestant sub-denominations (e.g., mainline or conservative).
2. Detailed information on characteristics of the countries included in our sample is available upon request.
3. We have provided results from supplementary analyses in detailed appendices available online. These Web appendices can be found at <http://timhuijts.ruhosting.nl>.
4. As a sensitivity analysis (presented in Web Appendix 2), we collapsed the original measure into three categories: people who never attend religious services (labeled *never*), people who attend religious services less often than once a week (*sometimes*), and people who attend religious services once a week or more (*often*). Results of these analyses were largely similar to the results presented herein.
5. In the sensitivity analyses in which a categorical measure of individual religious attendance was used (Web Appendix 2), we used the percentage of never attendees and the percentage of often attendees at the country level as measures of national religious attendance.
6. As a sensitivity analysis, we examined whether the cross-level interactions between individual and national religious denominations could be attributed to cross-level interactions between individual and national religious attendance (see Web Appendix 8). The results demonstrated that this is not the case. Also, excluding countries one by one did not lead to different conclusions (see Web Appendix 9). Additionally, we estimated a model that included the interactions between individual denomination and the percentage of Catholics, as well as the interactions between individual denomination and the percentage of Protestants. In this model, we found that the interaction between individual Catholicism and the percentage of Catholics is no longer significant once interactions between individual denomination and the percentage of Protestants are controlled for. Given that the percentages of Catholics and Protestants are strongly correlated, it is difficult to assess whether the interaction effect is spurious or

whether both national-level characteristics are too strongly correlated to allow for simultaneous inclusion in our models. Therefore, we decided to be careful in drawing conclusions on this particular interaction effect. Note that the interactions between individual denomination and the percentage of Protestants are not at all changed after including all interactions simultaneously.

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